

Work Order ID 57325

April 6, 2010 1:27:17 PM



Page 1

Item ID: D315-668-012

Accept



Setup Start



Revision ID:

Item Name: Skidtube RH

Stop



Start Date: 06/04/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 16/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan: *AA*

Date: *10/4/06* Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D2904

Rev B

0.00

100



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile & type labels per PPPD315-668-012

CHG001

1002 for Chris

10/4/06

10/4-06

1

DART		TEL.: 1-613-632-3336 FAX: 1-613-632-4443	
TRANSPORT CANADA APPROVAL # 09-89			
P/N	D315-668-012	CHG	CHG001
DESC.	Skidtube	STC	
LOT	B57325	STC	SR00848SE
MODEL	SA 315B	STC	
US PATENT # 5735484 CANADA FOREIGN PATENTS PENDING		MADE IN CANADA	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

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Run Start

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

110

0.00

Skidtubes

Skidtubes

Memo

0.00

Skidtubes

LANDING GEAR RESOURCE 1

1-Cut D2904b to length as per dwg D2904

2-Drill aft and fwd cap holes as per dwg D2904 using DT8025 jig
(DO NOT OPEN TO FINISH SIZE)3-Drill saddle holes (6 Deg) as per Dwg D2904 using DT8938A jig
(ENSURE THAT LOCATOR RING IS SET FOR RH TUBE)4-Drill GHW holes (3 Deg) as per Dwg D2904 using DT8938b jig
(ENSURE THAT LOCATOR RING IS SET FOR RH TUBE)5-Insert and cleco doublers and DT8938d in position. Transfer drill 256 holes
thru tube and doublers

6-Remove, identify batch # and orientation of doublers

7-C'sink rivet holes in tube 256 places as per dwg D2904 and deburr

8-Locate from saddle holes, drill wearplate holes using DT8994. Jig must be 1.7"
from aft end of tube (REF)9-Remove fwd and aft indexing ridges as per dwg D2904. Open fwd and aft cap
holes to finish size, scribe batch # at aft end of tube

10-Remove marks left from drill jig and deburr

M10/4/13

10-4-14

M10/5/14

M12/5/11

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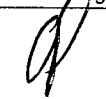




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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D315-668-012 PAR #: 10-032 Fault Category: _____ NCR: Yes ☒ No ☐ DQA: 7 Date: 100612
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR: <u>57325</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
10.04.19	110	MS20001AD403 RIVETS ARE BREAKING DURING INSTALLATION	 10.04.19 pw QSI 042	USE CR3212 CR3212-4-03 RIVETS. FSHEER = 24016 FOR MS20001 FSHARP = 66414 FOR CR3212	 10/5/12	 10/6/12	 10.04.19 pw QSI 042	 10/6/12

NOTE: Date & initial all entries

Chris Provencal

From: Chris Provencal [cprovencal@dartaero.com]

Sent: April 19, 2010 1:32 PM

To: 'David Shepherd'

Cc: 'Mike Petsche'; 'Bill Beckett'; 'Dan Stow'

Subject: RE: Lama skidtube deviation

Per SR-D315-668 Rev. B, the shear strength of the MS20601AD4W3 was 240 lb. Per Cherrymax Rivet Data Sheet, the shear of a CR3212 is 664 lb.

According to Dan, this has been an issue for as long as he can remember, it's just that he would normally just replace the broken rivets without making an issue out of it. The stem is breaking inside the rivet instead of flush with the head.

-Chris

From: David Shepherd [mailto:dshepherd@dartaero.com]

Sent: April 19, 2010 12:03 PM

To: 'Chris Provencal'

Cc: 'Mike Petsche'; 'Bill Beckett'; 'Dan Stow'

Subject: RE: Lama skidtube deviation

As long as you are 100% confident that the rivets are stronger than what you analyzed to, then I am OK with the substitution.

Although we haven't made many Lama skidtubes, this is not the first time we've ever made these parts ... How did we ever make them before? Perhaps we were more skilled 5 years ago?

David

From: Chris Provencal [mailto:cprovencal@dartaero.com]

Sent: Monday, April 19, 2010 9:47 AM

To: 'David Shepherd'

Cc: 'Mike Petsche'

Subject: Lama skidtube deviation

David,

For D315-668-XXX Lama Skidtubes, they want to use CR3212 rivets instead of the MS20601AD4W3 rivets to attach the doublers. They're having to replace about 35% of the mil spec rivets because they break before being able to pull the doubler against the skidtube. They've started using the cherrymax rivets for a few of the doublers and haven't had to replace a single one.

Bill is OK with using the new rivets, the time saved should make up for the additional cost of the rivet.

Besides the obvious strength difference, the MS rivets are all-aluminum, while the cherrymax are aluminum exterior with an alloy-steel pin. Unless you have an objection, I'll sign off the w/o's (based on stronger rivet and that we've used them on other skids) and update dwgs.

-Chris

No virus found in this incoming message.

Checked by AVG - www.avg.com

Version: 8.5.437 / Virus Database: 271.1.1/2820 - Release Date: 04/19/10 06:31:00 - ----

2010-04-19

CHERRYMAX® RIVET SELECTION

MECHANICAL PROPERTIES

Materials		Ultimate Shear Strength	Maximum Temperature
Sleeve	Stem		
5056 Aluminum	Alloy Steel	50,000 PSI	250°F
5056 Aluminum	CRES	50,000 PSI	250°F
Monel	CRES	75,000 PSI	900°F
Inco 600	Inco X-750	75,000 PSI	1400°F

MINIMUM RIVET SHEAR & TENSILE STRENGTH (LBS.) IN STEEL COUPONS

RIVET DIAM	SHEET THICK	SINGLE SHEAR					TENSILE						
		ALUMINUM		MONEL		INCO	ALUMINUM			MONEL		INCO	
		Nom.	O/S	Nom.	O/S	O/S	Nom.	O/S	O/S	Nom.	O/S	O/S	
		3212	3242	3522	3552	3852	3212	3214	3242	3522	3524	3552	3852
		3213	3243	3523	3553	3853	3213	3224	3243	3523		3553	3853
	3214	3245	3524	3555		3222		3245			3555		
	3222	3246		3556		3223		3246			3556		
	3223	3252						3252					
	3224	3253						3253					
		3255						3255					
1/8 (-4)	2x.156	664	814	995	1220	1220	285	250	345	400	360	490	570
5/32 (-5)	2x.187	1030	1245	1545	1865	1865	445	390	530	635	555	740	860
3/16 (-6)	2x.219	1480	1685	2215	2525	2525	635	560	710	890	800	1000	1160
1/4 (-8)	2x.281	2615	2925	3920	4390	4390	1125	1000	1260	1570	1410	1755	2030

Values shown are fastener capabilities only. Design values will be limited by the bearing strength of the sheet material used.

GAGES

269C3 GRIP GAGE

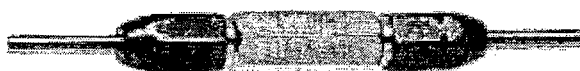
NATIONAL STOCK NUMBER 5210-00-255-7544

A simple, self-explanatory gage for determining material thickness and proper rivet grip length.



T-172 RIVET HOLE SIZE GAGE

These are precision ground, go no-go gages used to check holes drilled for CherryMAX® rivets. They are made in both nominal and oversize rivet diameters.



RIVET DIAMETER	GAGE NUMBER	NATIONAL STOCK NO.	RIVET DIAMETER	GAGE NUMBER	NATIONAL STOCK NO.
1/8" Nominal	T-172-4	5220-00-478-4135	1/8" Oversize	T-172-400	5220-00-478-4137
5/32" Nominal	T-172-5	5220-01-021-3276	5/32" Oversize	T-172-500	5220-00-478-4140
3/16" Nominal	T-172-6	5220-00-478-4136	3/16" Oversize	T-172-600	5220-00-478-4141
1/4" Nominal	T-172-8	5220-00-478-4139	1/4" Oversize	T-172-800	5220-01-374-1340

ATTENTION

Blind rivets are not always a suitable substitute for solid rivets. Maintenance personnel are reminded that AC 43.13-1A chapter 2, section 3 stipulates: "Do not substitute hollow rivets for solid rivets in load carrying members without specific approval of the application by a representative of the Federal Aviation Administration. Blind rivets may be used in blind locations in accordance with the conditions listed in Chapter 5, provided the edge distances and spacings are not less than the minimum listed in paragraph 99d."

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Stop



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Required Date: 16/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

120



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

8 10/05/11

Memo

0.00

(YL)

130



HandFinish

Hand Finishing

Chemical Conversion Coat per QSI005 4.1
HandFinishing

0.00

Memo

0.00

Chemical Conversion Coat Tube & Doublers

1 10/05/11

140



QC

Quality Control

QC3- Inspect Part Finish

0.00

Memo

0.00

DP 10-5-11

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Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150 	Skidtubes	0.00							
Skidtubes	Memo	0.00							
Skidtubes	LANDING GEAR RESOURCE 1								
	1-Remove alodine around X-bolt holes on doublers								
	2-Rivet doublers as per dwg D2904.(DO NOT INSTALL RIVETS AROUND X-BOLT HOLES AT THIS TIME)								
	3-Open X-bolt spacer holes to finish size as per dwg D2904.(DO NOT USE CUTTING FLUID)								
	4-C'sink and deburr X-bolt spacer holes and prepare for welding								
	5-Blow all chips from inside tube.								
	6-Bond web in place per QSI 015. Allow 12 Hrs. cure time before cutting								
	Pick: Qty <input type="checkbox"/> Part Number <input type="checkbox"/> Description <input type="checkbox"/> Batch <input type="checkbox"/>								
	A/R <input type="checkbox"/> <input type="checkbox"/> Sikaflex-291 <input type="checkbox"/> 14132455 <input type="checkbox"/>								
	Sikaflex expire date: 10/11/10								
	Start Time: 3:45 Date: 10/5/11								
	Fin Time: _____ Date: _____								

11/7/5/11

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

160

0.00



Skidtubes

Skidtubes

Memo

0.00

Skidtubes

LANDING GEAR RESOURCE 1

1-Weld crossbolt spacers D2909as per Dwg. D2904and QSI 004.

For D2579 spacers, weld one side, pass Y" drill, weld other side, pass Y" drill
A/R□□□ Aluminum Rod

M12507

BE 10/05/12

2-Grind welds as per Dwg D2909

3-Install remaining rivets around X-bolt spacers, use rivet shaver as necessary

4-Deburr, inspect tube for any visible scratches

) M10/5/12

170



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

8/06/12

EC

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180 QC Quality Control	QC10- Inspect visual per QSI004- ground welds Memo	0.00 0.00	Skidtube			<u>10</u>			
190 HandFinish Hand Finishing	Pressure Wash per QSI005 4.3 Memo	0.00 0.00				<u>①</u>	<u>BR 10-5-13</u>		
200 Powdercoat Powder Coating	White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum <u>MA 114209</u> Memo POWDER COATING Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3 START TIME: <u>9:15am</u> OVEN TEMPERATURE: <u>320°F</u> FINISH TIME: <u>9:15am</u>	0.00 0.00	<u>= 1 1/2 10/05/04</u>			<u>21</u>	<u>8</u>		

W/O:		WORK ORDER CHANGES					
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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

210

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

8 10/5/19

80

220

HandFinishing

0.00



HandFinish

Memo

0.00

Hand Finishing

HAND FINISHING RESOURCE #1

1-Install inserts & wearplates as per Dwg. D2904. Use a drop of Sikaflex on insert holes before installing wearplates

A/R ☐ ☐ ☐ Sikaflex-291 11/24/29

Sikaflex expire date: 10/08

3-Inspect for foreign object per QSI 024

4-Install 2646 Aft & fwd Caps as per Dwg D2904 and seal with Sikaflex. Clean excess adhesive

A/R ☐ ☐ ☐ Sikaflex-291 11/24/29

Sikaflex expire date: 10/08

5-Wing Walk as per Dwg D2904 and QSI 005

4.4

Batch: 114432

① BK 10-5-18.

W/O:		WORK ORDER CHANGES					
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230 QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00	8-12/05/19			①			
240 Packaging Packaging	Identify as per dwg & Stock Location: _____ Memo	0.00 0.00				10/05/20 ①			
250 QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.00				10/05/21 ① pl 10-5-21			

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Picklist Print

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Page 1

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Parent Item: D315-668-012

Parent Item Name: Skidtube RH


Comments: IPP Rev:A New Issue 07-04-12 JLM

Start Date: 06/04/2010

Required Date: 16/04/2010


Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2904B  Skidtube, 315		Manufactured	No			110	Each	2.0000	1.0000			


<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
LG	2	
31826	1	
36926	1	

1357330 1 M04/13

D2910  Doubler		Manufactured	No			110	Each	44.0000	2.0000			
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<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST030	44	
36927	44	

2 M05/12

D2911  Doubler		Manufactured	No			110	Each	53.0000	2.0000			
---	--	--------------	----	--	--	-----	------	---------	--------	--	--	--

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST030	53	
36928	53	

2 M05/12

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Picklist Print

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Page 2

Work Order ID: 57325

Parent Item: D315-668-012

Parent Item Name: Skidtube RH



Comments: IPP Rev:A New Issue 07-04-12 JLM

Start Date: 06/04/2010



Required Date: 16/04/2010

Start Qty: 1.00



Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS27039-1-08		Purchased	No			120	Each	1,958.000	54.0000			
												
Screw												

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST291	1958	
110552	44	
110835 ✓	1914	

D2912		Manufactured	No			150	Each	40.0000	2.0000			
												
Doubler												

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST030	40	
36929	40	

MS20601-AD4W3		Purchased	No			150	Each	228.0000	256.0000			
												
Rivet												

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
ST322	228	
111359	28	
113899	200	

CR 3212-4-03

M 114426

256

M 10/5/11

April 6, 2010 1:27:21 PM

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Page 2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Page 3

Work Order ID: 57325

Parent Item: D315-668-012

Parent Item Name: Skidtube RH



Comments: IPP Rev:A New Issue 07-04-12 JLM

Start Date: 06/04/2010

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Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2905 		Manufactured	No			160	Each	0.0000	1.0000			
Web, 315 Skidtube ALS4-1032-130 		Purchased	No			220	Each	40.0000	50.0000			
Insert												

857337 ① 4/19/11

Warehouse
Location

Loc Qty

Loc Code

Main Warehouse

ST282

110511

40

40

50 BR 10-5-18.

AN960JD10L



Washer

Purchased

No

220

Each

4,693.000

54.0000



Warehouse
Location

Loc Qty

Loc Code

Main Warehouse

ST348

110985 ✓

4693

4693

54 BR 10-5-18.

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Page 4

Work Order ID: 57325

Parent Item: D315-668-012

Parent Item Name: Skidtube RH



Comments: IPP Rev:A New Issue 07-04-12 JLM

Start Date: 06/04/2010

Required Date: 16/04/2010

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2646  Aft Cap		Manufactured	No			220	Each	35.0000	2.0000 			

Warehouse
Location

Loc Qty

Loc Code

Main Warehouse

FP6

28

52663 ✓

28

Main Warehouse

fp7

7

52663

7

D2648-3



Wearpad

Manufactured

No

220

Each

40.0000

5.0000


Warehouse
Location

Loc Qty

Loc Code

OFFSHORE

FG

12

45316

12

Main Warehouse

FP17

28

52516 ✓

28

2 BR 10-5-18.

5 BR 10-5-18.

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Page 4

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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Page 5

Work Order ID: 57325

Parent Item: D315-668-012

Parent Item Name: Skidtube RH



Comments: IPP Rev:A New Issue 07-04-12 JLM

Start Date: 06/04/2010

Required Date: 16/04/2010

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2656-13  Wearplate		Manufactured	No			220	Each	15.0000	1.0000 			

Warehouse Loc Qty Loc Code

Location

Main Warehouse

FP20

12

55454

12

Main Warehouse

MEZZ

3

44158 ✓

3

1 BR 10-5-18.

D2656-33



Wearplate

Manufactured No

220

Each

22.0000

1.0000


Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

MEZZ

22

43806 ✓

9

46167

13

1 BR 10-5-18.

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Page 6

Work Order ID: 57325

Parent Item: D315-668-012

Parent Item Name: Skidtube RH


Comments: IPP Rev:A New Issue 07-04-12 JLM

Start Date: 06/04/2010

Required Date: 16/04/2010

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2907  Wearshoe		Manufactured	No			220	Each	32.0000	1.0000			

Warehouse
Location

Loc Qty

Loc Code


Main Warehouse

FP

32

146544 ✓

32

D2909  Spacer, Lama		Manufactured	No			220	Each	129.0000	11.0000			
---	--	--------------	----	--	--	-----	------	----------	---------	--	--	--

Warehouse
Location

Loc Qty

Loc Code

Main Warehouse

LG

129

12947

13

14091

116

1 BR 10-5-18.

11 BE 10/05/12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN CP	DRAWN BY CP	DART AEROSPACE USA, INC. BELLEVUE, WA	
CHECKED [Signature]	APPROVED [Signature]	DRAWING NO. D2904	Rev. B SHEET 1 OF 3
DATE 00.06.21		TITLE SA 315B SKIDTUBE ASSEMBLY	SCALE NTS
A	99.09.09	NEW ISSUE	
B	00.06.21	CHANGED ANGLES FOR HOLES	

PARTS LIST:

Qty -041	Qty -042	Part Number	Description
X		D2904-041	LH SKIDTUBE ASSEMBLY
	X	D2904-042	RH SKIDTUBE ASSEMBLY
2	2	D2646	CAP
4	4	D2648-3	WEARPAD
1	1	D2648-5	WEARPAD
1	1	D2656-13	WEARSHOE
1	1	D2656-33	WEARSHOE
1		D2904-1	SKIDTUBE
	1	D2904-2	SKIDTUBE
1	1	D2905	WEB
1	1	D2907	WEARSHOE
11	11	D2909	CROSS BOLT SPACER
2	2	D2910	SKIDTUBE DOUBLER
2	2	D2911	SKIDTUBE DOUBLER
2	2	D2912	SKIDTUBE DOUBLER
50	50	ALS7-1032-130 or AKS4-1032-130 or ALS4-1032-130 or ALS7-1032-130	INSERT
54	54	AN960JD10L	WASHER
256	256	MS20601AD4W3	RIVET
54	54	MS27039-1-08	SCREW

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 57325
BS10-21-05

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00.07.01 [Signature]

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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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DESIGN CP	DRAWN BY CP	DART AEROSPACE USA, INC. BELLEVUE, WA	
CHECKED #	APPROVED #	DRAWING NO. D2904	Rev. B SHEET 2 OF 3
DATE 00.06.21		TITLE SA 315B SKIDTUBE ASSEMBLY	SCALE 1:20

GENERAL NOTES:

1. TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
2. MAKE D2904-1 AND D2904-2 FROM D2914 EXTRUSION (INITIAL LENGTH = 142.0).
3. DAMAGE TOLERANCE ON BENDING:
THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 7 INCHES ABOVE THE GROUND. NO GOUGING IS ACCEPTABLE IN THE FLAT PORTION OF THE TUBE. GOUGES UP TO 0.020 ARE ACCEPTABLE IN THE BENT PORTION OF THE TUBE. TUBE O.D. SHOULD BE 3.150 ± 0.010 IN THE FLAT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.
4. ALL HOLES DRILLED ON CENTERLINES EXCEPT THOSE NOTED BY SECTION C-C.
5. DRILL #30 HOLES ($\varnothing 0.128$ REF) TO LINE UP WITH $\varnothing 0.128$ HOLES IN D2910/D2911/D2912 DOUBLERS. C'SINK $\varnothing 0.239 \times 100^\circ$.
6. BOND D2905 WEB INTO D2904-1 (OR D2904-2) OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241/291 ADHESIVE PER DART QSI 015. ENSURE HOLES LINE-UP.
7. WELDING TO BE DONE PER DART QSI 004.
8. AFTER DRILLING, BENDING, AND INSTALLING WEB & DOUBLERS, PERFORM THE FOLLOWING FOR $\varnothing 0.500$ HOLES ONLY:
- CHAMFER HOLE $0.050 \times 45^\circ$
 - INSERT D2909 SPACER (11 PLACES)
 - WELD INTO PLACE
 - GRIND FLUSH
 - DRILL OUT SPACER TO $\varnothing 0.406$
9. FINAL CONFIGURATION SHOULD HAVE THE FOLLOWING MINIMUM MECHANICAL PROPERTIES:
- MINIMUM YIELD TENSILE STRENGTH = 35 ksi
 - MINIMUM ULTIMATE TENSILE STRENGTH = 38 ksi
10. FINISH:
- ACID ETCH, ALODINE ASSEMBLY PER DART QSI 005 4.1 PRIOR TO INSTALLING D2905 WEB AND D2910/D2911/D2912 DOUBLERS.
 - POWDER COAT WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3
 - BLACK ANTI-SKID PAINT AS INDICATED TO 1.0 ABOVE SKIDTUBE CENTER-LINE PER DART 005 4.4 (OPTIONAL).
11. DRILL $\varnothing 0.297$ FOR ALS7-1032-130 INSERT USING DT8395 BEFORE FINISH. INSTALL ALS7-1032-130 INSERTS AFTER FINISH.

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00.09.01

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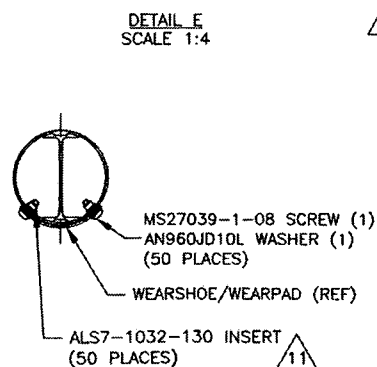
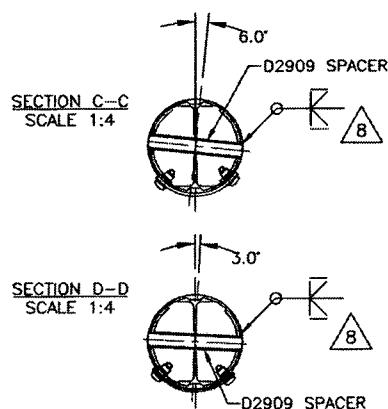
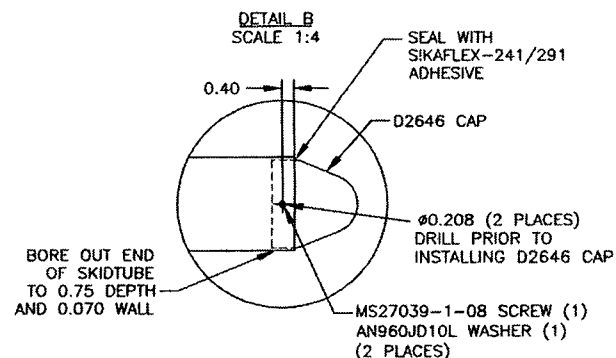
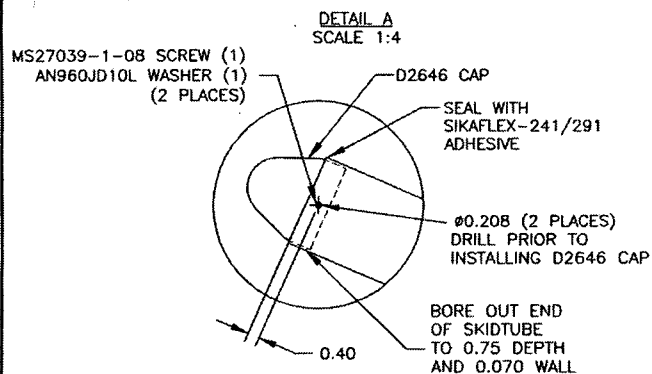
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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

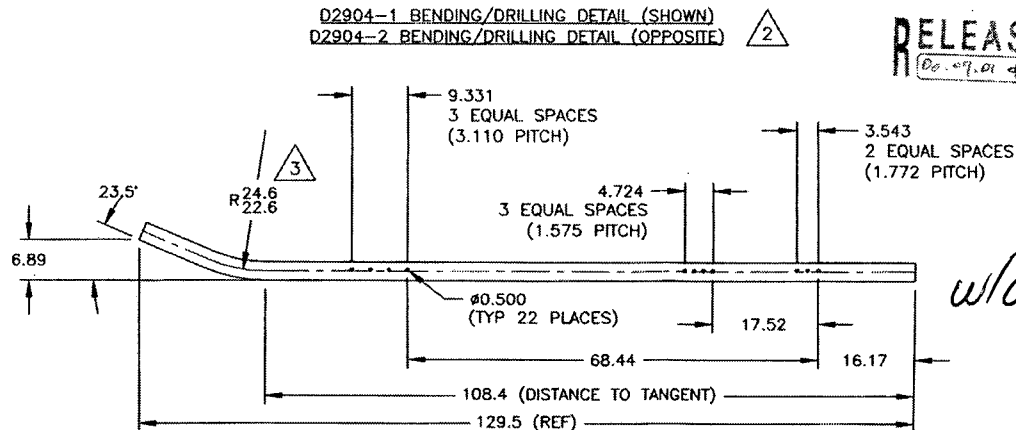
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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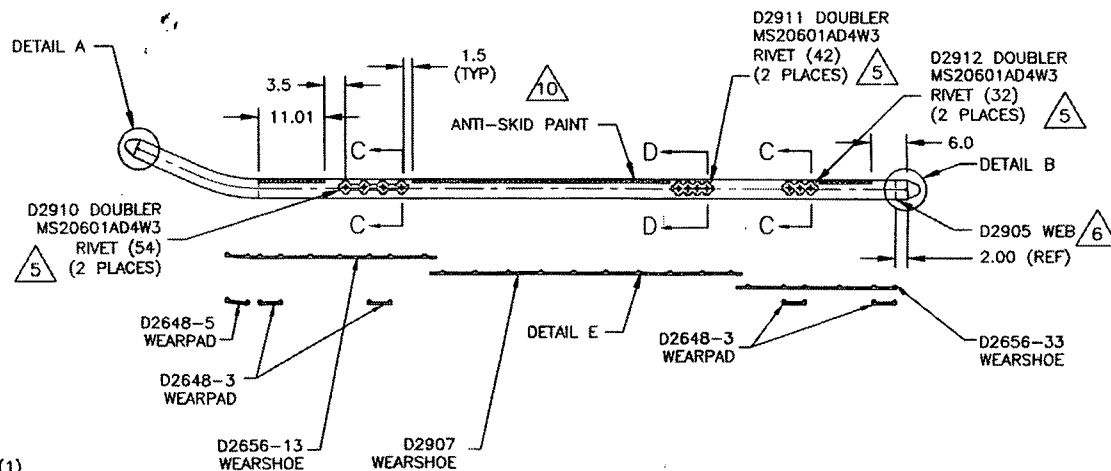
NOTE: Date & initial all entries



D2904-1 BENDING/DRILLING DETAIL (SHOWN)
D2904-2 BENDING/DRILLING DETAIL (OPPOSITE)



D2904-041 LH ASSEMBLY DETAIL (SHOWN)
D2904-042 RH ASSEMBLY (OPPOSITE)



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DATE 00.06.21		TITLE SA 315B SKIDTUBE ASSEMBLY		SCALE 1:20	

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W/O:		WORK ORDER CHANGES					
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NO. 152

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Eliot
Job number: B36899
Part number: A315668011
Description: Skid tube (Lame)
Welding Process: Tig[☒] Mig[]
Base material: Aluminum
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier David Lavel Date of Test Coupon 08/04/24
Welder Barclay Eliot Date of Test Coupon 08/04/24

The above named individual is qualified in accordance with AWS D17.1.2001 to weld